MULTI-SENSOR SMOKE DETECTORS
WHAT'S THEORETICAL
WHAT'S PRACTICAL

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Introduction

Today there is a trend towards multi-sensor smoke detectors. However, an accepted definition of what one is or is not remains to be agreed upon. What benefits can be derived from multi-sensor detectors need to be understood.

This presentation looks at what is theoretically possible based on a study of the byproducts of combustion of 24 different materials and 38 fires using those materials.

The composition of the effluents of three of UL's standard fire tests were reviewed as well as all of the EN54 large scale fire tests.

Results and Discussion

From these studies, the byproducts of combustion were ranked as a percent (%) of the fires in which these byproducts were present. The concentrations of byproducts were also measured.

As a result of this ranking, in conjunction with the concentration levels, theoretical combinations of sensors to be used in detectors were made. Each combination was run through an algorithm to determine the response of this combination of sensors to the burning of the variety of materials found in the large scale fire tests.

Which combinations of sensors performed well were noted. Which combinations were least susceptible to non-fire stimuli were noted.